

[54] CONTROL AND DISPLAY SYSTEM

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[56] References Cited

U.S. PATENT DOCUMENTS

3,056,030	9/1962	Kelchner .	
3,372,789	3/1968	Thiele et al. .	
3,373,287	3/1968	Holzer .	
3,398,290	8/1968	Basehore et al. .	
3,526,775	9/1970	Friedrich et al. .	
3,673,327	6/1972	Johnson et al. .	
3,885,408	5/1975	Clark, Jr. .	
3,956,745	5/1976	Ellis	340/712
4,224,615	9/1980	Penz	340/712
4,247,767	1/1981	O'Brien et al. .	
4,267,443	5/1981	Carroll et al. .	
4,329,581	5/1982	Helfrich, Jr. et al. .	
4,340,813	7/1982	Sauer .	
4,386,836	6/1983	Aoki et al.	350/331 R
4,387,367	6/1983	Fisher .	
4,566,758	1/1986	Bos .	
4,582,396	4/1986	Bos et al. .	
4,611,889	9/1986	Buzak .	
4,635,051	1/1987	Bos .	
4,652,087	3/1987	Bos et al. .	
4,670,744	6/1987	Buzak .	

FOREIGN PATENT DOCUMENTS

2082427 3/1982 United Kingdom 340/712

OTHER PUBLICATIONS

IBM Technical Disclosure Bulletin, "Optical Data Input Device" by Baumann et al., vol. 11, No. 10, pp. 1281 and 1282, Mar. 1969.

IBM Technical Disclosure Bulletin, "Finger Position Detect Method" by Thompson, vol. 23, No. 7B, Dec. 1980, p. 3289.

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[57] ABSTRACT

A control system comprises a liquid crystal display panel; a light source; and a light detector. Light from the source is directed through at least a portion of the liquid crystal display panel to the light detector. A control circuit is provided for holding the liquid crystal display in generally opaque condition while preferably sequentially momentarily clarifying segments of the portion, whereby momentary, sequential, transversely spaced light beams are generated between the light source and the light detector. A timer and logic circuit is provided for correlating signals received from the light detector with generated, individual, spaced light beams that create the signals. Accordingly, occlusion of at least one of the individual light beams with an opaque member causes a specific characteristic response by the timer and logic circuit. In other words, when one of the individual light beams is occluded, the timer and logic circuit emits a characteristic signal which might activate a relay, send an instruction to a microprocessor, or cause some other action.

24 Claims, 4 Drawing Sheets

